

1. A tractor for movement along a pipeline within a fluid flow along the pipeline,
the tractor comprising propulsion means for propelling the tractor along the pipeline in
5 the direction of the fluid flow at a speed which is not directly related to the speed of the
fluid flow.
2. A tractor for movement along a pipeline within a fluid flow along the pipeline,
the tractor comprising speed regulated propulsion means for propelling the tractor along
10 the pipeline in the direction of fluid flow at a regulated speed.
3. A tractor according to claim 1 or 2, wherein the propulsion means includes
speed regulating means for regulating the speed at which the tractor is propelled along
the pipeline to a speed which is substantially independent of the speed of the fluid flow.
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4. A tractor according to claim 3, wherein the speed regulating means incorporates
braking means for braking the tractor by engagement with a wall of the pipeline.
5. A tractor according to claim 2 or 3, wherein the speed regulating means
20 incorporates a speed governor for controlling the speed at which traction means
engaging a wall of the pipeline is driven.
6. A tractor according to any preceding claim, wherein the propulsion means is
driven by driving means adapted to be driven by the fluid flow.
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7. A tractor according to claim 6, wherein the driving means is a turbine.
8. A tractor according to claim 7, wherein the turbine incorporates variable blade
means, and the speed regulating means is arranged to vary the speed at which the tractor
30 is propelled along the pipeline by changing the angle of the blade means with respect to
a central axis.

9. A tractor according to claim 7 or 8, wherein the driving means is coupled to the propulsion means by conversion means which is adjustable to vary the degree of coupling between the propulsion means and the drive means.

5 10. A tractor according to claim 9, wherein the conversion means comprises a magnetic coupling.

11. A tractor according to claim 10, wherein the coupling comprises driving and driven elements which are relatively axially movable.

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12. A tractor according to claim 9, 10 or 11, wherein the conversion means comprises reduction gearing for converting a high speed low torque input from the propulsion means to a relatively low speed high torque output to the drive means.

15 13. A tractor according to claim 9, 10, 11 or 12, wherein the conversion means comprises a harmonic drive.

14. A tractor according to any preceding claim, wherein the propulsion means incorporates a plurality of traction elements for engaging a wall of the pipeline, and
20 drive means for driving the traction elements to move the tractor along the pipeline.

15. A tractor according to claim 14, wherein the traction elements are wheels which are driven in rolling engagement with the wall of the pipeline.

25 16. A tractor according to claim 14, wherein the traction elements are outwardly extending legs or brushes which are driven backwards and forwards relative to the wall of the pipeline to effect propulsion of the tractor in the required direction along the pipeline.

17. A tractor according to claim 15, wherein the angular orientation of the traction
30 elements with respect a central axis is adjustable, and the speed regulating means is arranged to vary the speed at which the tractor is propelled along the pipeline by changing the angle of the traction elements with respect to the central axis.

18. A tractor according to claim 16 or 17, wherein the traction elements are mounted on eccentric bearing means.

5 19. A tractor according to any one of claims 14 to 18, wherein the drive means comprises a rotatable shaft extending generally axially within the pipeline.

20. A tractor according to any one of claims 14 to 19, wherein braking means are provided for braking the traction elements in order to control the rate at which the
10 tractor is propelled along the pipeline.

21. A tractor according to claim 20, wherein the braking means comprises a disc braking system.

15 22. A tractor according to any one of claims 14 to 21, wherein the propulsion means incorporates two traction units incorporating traction elements for engaging the wall of the pipeline and adapted to be driven by the drive means such that the traction units are biased to act in opposite directions.

20 23. A tractor according to claim 22, wherein control means are provided for controlling the rate at which the traction elements of the two traction units are driven relative to one another so as to regulate the speed at which the tractor is propelled along the pipeline.

25 24. A tractor according to any preceding claim, wherein a fluid bypass is provided for permitting fluid flow along the pipeline past the tractor.

25. A tractor according to any preceding claim, wherein cleaning means is provided for removing or dislodging material from a wall of the pipeline.

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26. A tractor according to any preceding claim, wherein jetting means is provided to direct jets of fluid onto a wall of the pipeline for removing or dislodging material from the wall.

5 27. A tractor according to any preceding claim, wherein cutting means is provided for removing or dislodging material from a wall of the pipeline.

28. A tractor according to any preceding claim, wherein inspection means is provided for inspecting a wall of the pipeline.

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29. A tractor for movement along a pipeline within a fluid flow along the pipeline, the tractor incorporating a geared braking mechanism for controlling the speed of the tractor along the pipeline in the direction of fluid flow.

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